ELABORATE ON JUSTIFICATION OF A STUDY PROGRAM IMPLEMENTATION

II STUDY CYCLE IN THE

SCIENTIFIC FIELD OF:

BIOTECHNICAL SCIENCES

NAME OF THE STUDY PROGRAM IN THE SECOND STUDY CYCLE:

ENVIRONMENTAL ENGINEERING

MODEL: 4+1

Travnik, December 2020

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1. REASONS FOR INITIATING THE STUDY PROGRAM

The International University Travnik in Travnik is a partner of the ECOBIAS, ERASUMS+, Capacity Building in Higher Education project. The project is coordinated by the Faculty of Science and Mathematics of the University of Novi Sad, and the project consortium consists of a total of 11 universities from five countries. In this call, the universities from Serbia have applied as program universities for the first time (University of Novi Sad and University of Niš), with the universities from Croatia (University of Zagreb) and Germany (University of Duisburg-Essen), and with partner universities from Bosnia and Herzegovina (University of Mostar, International University of Travnik, University of Tuzla, University of Sarajevo, University of East Sarajevo and University of Banja Luka) and a partner from Montenegro, University of Donja Gorica. https://iu-travnik.com/partneri/.The ECOBIAS project (Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs) aims to develop and improve the knowledge/skills/technical resources of higher education institutions in partner countries in ecological monitoring and biological assessment of freshwater resources in accordance with the national and EU policy.

Project objectives:

• Development and implementation of an advanced master's curriculum in Ecological Monitoring and Biological Assessment of Aquatic Ecosystems (EMAB) at institutions of higher education in the countries of the Western Balkans in accordance with the Bologna and national standards for accreditation;

• Development and implementation of lifelong learning courses for the environmental monitoring sector in accordance with the EU Water Framework Directive at institutions of higher education in the countries of the Western Balkans;

• Equipping 7 laboratories for ecological monitoring and biological assessment of freshwater ecosystems (EMAB) in institutions of higher education in the countries of the Western Balkans;

• Development of the regional academic ECOBIAS network for the organization and promotion of regional cooperation in the field of ecological monitoring and biological assessment of aquatic ecosystems.

Activities within the preparation of the work package provide a detailed comparative analysis of knowledge/skills/practice in the field of ecological monitoring and biological assessment of aquatic ecosystems in the program and partner countries. The results of the analyses will show which fields within EMAB need strengthening, modernization or development. Analyses of the labour market needs for experts in the field of EMAB will be carried out in order to estimate the optimal number of students for each institution of higher education in the partner countries. Finally, the analysis of the curricula of the I and II cycle of studies that are related to EMAB in the program and partner countries will provide the basis for the design of courses and syllabi for ECOBIAS. Through this project, the International University Travnik will develop a new study program in the field of ecological engineering of inland waters.

The results:

- At least 26 new EMAB MSc courses (M2 2021) and learning materials developed by M8 2021, and implemented by M12 2022
- At least 9 new lifelong learning courses and training materials developed by M8 2021, and implemented by M10 2022
- At least 68 teaching staff members trained until M8 2021
- 6 new laboratories designed and equipped by M12 2020
- 4 master's curricula in the field of EMAB developed, implemented and accredited/approved by M4 2022
- At least 28 students enrolled in the new master's curriculum by M9 2021
- At least 10 participants from the environmental monitoring sector in the partner countries of the Western Balkans trained until M10 2022
- ECOBIAS-NET academic network established by M12 2021

After a detailed analysis of the syllabi in the field of ecology and environmental protection in the studies of the I and II study cycle at the universities in BiH, it was established that there were 9 universities out of 10 accredited universities that met the conditions, in terms of students' prior knowledge, for development of syllabus in the field of ecological monitoring and bioindication of inland waters, given that none of the universities has already got a developed proposed course, nor the I or II study cycle.

The development of ECOBIAS master's study programs and lifelong learning courses in ecological monitoring and bioanalysis of freshwater ecosystems fully address the regional priority for the Western Balkans region for joint projects - Development of study programs in the subject area of "Environment", as well as the national priority of Bosnia and Herzegovina for joint projects -Development of study programs in the subject area of "Environment".

Partner country / region / Montenegro / Region of the Western Balkans The development of ECOBIAS LLL courses in ecological monitoring and bioassessment of freshwater ecosystems fully address the regional priority for the Western Balkans region of the for joint projects - Curriculum development in the subject area of "Environment", as well as the national priority of Montenegro for joint projects - Curriculum development in the subject area of "Environment". Water quality management in lakes and rivers has been an important issue of environmental protection in Europe during the last decades. Although remarkable improvements have been made, the topic is still relevant. The European Community is constantly working to improve water quality and guarantee the good condition of all waters. Monitoring and assessment of water quality is one of the important tools for water management. According to the EU Water Framework Directive, the assessment of the ecological condition of rivers and lakes should be based mainly on biological elements, such as aquatic macrophytes, phytobenthos, benthic macroinvertebrates, phytoplankton and fish, supported by hydromorphological features and physicochemical parameters of water quality. The WFD is linked to a number of other EU directives in several ways. These include directives related to protection of biological diversity (Birds and Habitats Directives), directives related to specific water uses (drinking water, bathing and urban waste water directives) and directives related to regulation of activities undertaken in the environment (industrial Guidelines on Environmental Impact Assessment). Development of an ecological assessment and classification system is not a simple matter, but one of the most important and technically demanding parts of the Water Framework Directive implementation. Capacity building in the field of higher education - joint projects Master curriculum development in ecological monitoring and assessment of water bioanalysis for higher education institutions of the Western Balkans / ECOBIAS Page 7 of 406. Therefore, the ECOBIAS project can be considered part of the above-mentioned pan-European process. The project supports the implementation of the Water Framework Directive in the Western Balkans region by developing an MSc curriculum and lifelong learning courses for professionals in ecological monitoring and bioassessment of freshwater ecosystems.

The milestone of the project is the transfer of knowledge from PgC to PC-partners in the application of standard methods for ecological monitoring of surface waters in accordance with ODV. Therefore, the ECOBIAS courses will cover all relevant monitoring areas proposed by the Directive: aquatic macrophyte monitoring, algology, GIS and remote sensing, software applications for river conservation assessment, assessment of the hydromorphological condition of lakes and rivers, environmental engineering and water protection technologies, mapping of aquatic and coastal habitats and field work, ichthyology and fisheries, ecological conservation and data processing, aquatic ecotoxicology, monitoring of aquatic macroinvertebrates, monitoring of macroalgae and cryptogam flora.

The development and intercalibration of the ecological state assessment system at the national and regional level is a long-term process that requires comprehensive databases of regularly monitored biological and environmental properties. Therefore, the building of higher education capacity in the Western Balkans region in the field of ecological monitoring and aquatic biological assessment is a necessary and inevitable step towards the integration of the EU's environmental protection policy in the region.

The goal of the ECOBIAS project is the development of professional staff in the field of ecological monitoring and bioindication of aquatic ecosystems, as well as capacity building and networking of higher education institutions with the aim of joint cross-border cooperation and application for EU projects. By establishing a unique methodological framework in the biomonitoring of inland waters in the Western Balkan region, the necessary conditions for joint intercalibration of ecological status assessment methods within the Eastern Continental Intercalibration Group are achieved. The masters program in Ecological monitoring and bioindication of inland waters would include two study programs, Ecological Engineering and Conservation Management, in accordance with the needs of public companies responsible for environmental monitoring. The beginning of the project is 15/01/2020 and the duration of the project is 3 years. For the International University Travnik in Travnik and the Faculty of Ecology Travnik in Travnik, the Environmental Engineering study program is planned, which includes:

- Development of the syllabus for the master's degree program in environmental engineering;
- Procurement of equipment for efficient implementation of the study program.

2. BASIC INFORMATION ABOUT THE UNIVERSITY AND ORGANIZATIONAL UNIT IN WHICH THE STUDY PROGRAM IS ESTABLISHED

2.1. International University Travnik in Travnik

The first organizational unit of the International University Travnik in Travnik (hereinafter: the University) was founded in 2007 under the name of Faculty of Economics and Technical Logistics by the Decision on Operation and Registration in the Register of Central Bosnia Canton (CBC) Higher Education Institutions, number: 03-38-49/07-4 dated 29/06/2007 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-FPTL-4.pdf and the Decision on Registration in the Court Register of the Municipal Court in Travnik number: 051-0-Reg-06-001916 dated 27/11/2006 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-FPTL.pdf. Immediately after that, the CBC Ministry of Education, Science, Culture and Sports issued a Decision on Operation and Registration in the Register of CBC Higher Education Institutions for the Faculty of Economics Travnik in Travnik number: 03-38-50/07-4 dated 06/29/2007 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-EFT-3.pdf, Decision on Registration in the Court Register of the Municipal Court in Travnik number: 051-0-Reg-07-000055 dated 30/01/2007 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-EFT.pdf. That same year, the CBC Ministry of Education, Science, Culture and Sports issues a Decision on Establishment and Registration in the Register of the Faculty of Traffic Travnik in Travnik number: 03-38-1/07 dated 05/01/2007 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-SFT-4.pdf, Decision on Registration in the Court Register of the Municipal Court in Travnik number: 051-0-Reg-07-000046 dated 09/03/2007 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-SFT.pdf. At the beginning of the year 2010, the Faculty of Ecology Travnik in Travnik was founded by the Decision on Registration in the Register of CBC Higher Education Institutions number: 03-38-112/09 dated 02/19/2010 issued by the CBC Ministry of Education, Science, Culture and Sports available on the official website http://iu-

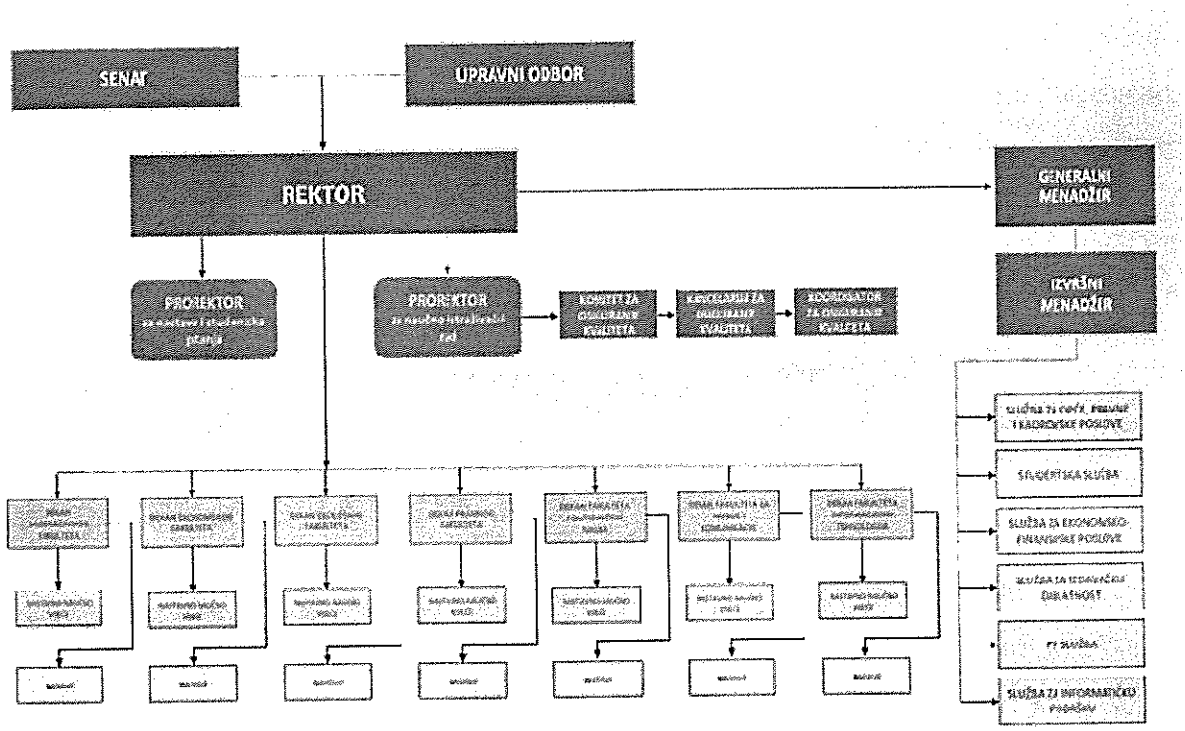
travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-TEF-3.pdf. By the Decision of the CBC Ministry of Education, Science, Culture and Sports number: 03-38-2/10-6 dated 05/03/2010 the International University Travnik was registered in the register of CBC higher education institutions available on the official website http://iu-travnik.com/wp-content/uploads/2019/12/35.-Rje%C5%A1enje-o-upisu-u-registar-IUT.pdf. By the Decision on Registration in the Court Register of the Municipal Court in Travnik. number: 051-0-Reg-14-000662 dated 02/02/2015 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/sudsko-rjesenje-IUT8836926228915580426.pdf the study program was extended to teaching- scientific fields of biotechnical sciences. In this way, the conditions for establishing a university under the Framework Law on Higher Education in Bosnia and Herzegovina ("Official Gazette of BiH" No. 59/07) have been met, according to which the university can be established under the condition that it implements at least five different study programs in at least three scientific fields (Decision on Registration in the Court Register of the Municipal Court in Travnik number: 051-0-Reg-10-000198 dated 24/05/2010 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-IUT.pdf). In the same year, the CBC Ministry of Education, Science, Culture and Sports issued a Decision on Registration in the Register of CBC Higher Education Institutions number: 03-38-27/10-7 dated 01/10/2010 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-PFT-4.pdf, for registration of the Faculty of Law Travnik in Travnik and the Faculty of Media and Communications Travnik in Travnik, which expanded the scientific-teaching area of social sciences by three additional study programs. The Decision on Registration of the Faculty of Law Travnik in the Court Register of the Municipal Court in Travnik was obtained on 13/05/2011 under number: 051-0-Reg-11-000473 and it is available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/sudsko-rjesenje-PFT2558898334470055851.pdf, while the Decision on Registration of the Faculty of Media and Communications Travnik in the Court Register of the Municipal Court in Travnik was obtained on 03/01/2013 under number: 051-0-Reg-12-000243 and it is available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/sudsjo-rjesenje-FMKT2465871225754464187.pdf. Teaching at these two faculties began in the academic year 2011/2012. By the decision of the CBC Ministry of Education, Science, Culture and Sports on the establishment of new

organizational units and status change in name and registration in the register of CBC higher education institutions number: 03-38-25/12 dated 31/05/2012 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-%E2%80%93-FiT-i-Rje%C5%A1enje-o-preimenovanju-FPTN.pdf, the Faculty of Information Technologies Travnik in Travnik was founded, and the Faculty of Economics and Technical Logistics Travnik in Travnik was renamed to the Faculty of Polytechnic Sciences Travnik in Travnik. The Decision on Registration of the Faculty of Information Technologies Travnik in the Court Register of the Municipal Court in Travnik was obtained on 26/01/2015 under number: 051-0-Reg-14-000660 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-FIT.pdf.

In 2017, the International University Travnik in Travnik moved to a new building with more than 10,500 square meters of space. By decision of the CBC Ministry of Education, Science, Culture and Sports on status change in address and seat, and registration in the register of CBC higher education institutions number: 03-38-12/17 dated 25/05/2017 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-Ministarstva-obrazovanja-nauke-i-kulture-SBK-o-promjeni-adrese-i-sjedi%C5%A1ta-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-%E2%80%93-IUT.pdf, the status change in the address and seat of the International University Travnik was entered, with its seat in the municipality of Travnik, in a new office building at the address: ul. Aleja Konzula – Meljanac bb, municipality of Travnik, whose previous address was: ul. Bunar bb – Dolac, municipality of Travnik, the International University Travnik received the Decision on Registration of Change in Address in the Court Register of the Municipal Court in Travnik on 28/08/2017 under number: 051-0- Reg-17-000466 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-upisu-u-Sudski-Registar-Op%C4%87inskog-suda-o-promjeni-adrese-%E2%80%93-IUT.pdf. On 06/09/2017, a Decision on Registration of Change in Address in the Court Register of the Municipal Court in Travnik was issued, in such a way as to correct the Decision of this Court number: 051-0-Reg-17-000466 dated 28/08/2017 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-o-izmjenama-podataka-sjediste-podruznice-FPTN-SFT-FIT-EF-PF-i-TEF-3.pdf, Decision on Registration of Change in Address of the Faculty of Media and Communications in the Court Register of the Municipal Court in

Travnik was received on 07/09/2017 under number: 051-0-Reg-17-000467 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rjesenje-o-izmjenama-podataka-sjedista-i-ovlastenog-lica-FMIK-3.pdf. On 03/06/2019 the Ministry of Education, Science, Culture and Sports issued Decisions on the Records of Study Programs Entered in the Register of Higher Education Institutions for: Faculty of Ecology Travnik number: 03-38-400-1/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-TEF-2.pdf, Faculty of Economics Travnik number: 03-38-400—2/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-EFT-3.pdf, Faculty of Information Technologies Travnik number: 03-38-400-3/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Resolution-for-work-and-enrollment-in-the-Register-of-high-education-institutions-SBK-%E2%80%93-FIT-3.pdf, Faculty of Polytechnic Sciences Travnik number: 03-38-400-4/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-FPTL-3.pdf, Faculty of Media and Communications Travnik number: 03-38-400-5/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-FMIK-3.pdf,, Faculty of Law Travnik number: 03-38-400—6/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-PFT-3.pdf and Faculty of Traffic Travnik number: 03-38-400—7/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Rje%C5%A1enje-za-rad-i-upis-u-Registar-visoko%C5%A1kolskih-ustanova-SBK-SFT-3.pdf. The organizational structure of the University is defined by the Statute in Chapter 3 (from Article 16 to Article 28) and Chapter 5 (from Article 35 to Article 78). The Statute of the University is available on the official website of the University http://iu-travnik.com/wp-content/uploads/2019/11/Statut-sa-izmjenama-septembar-2019.pdf whose amendments were adopted on 13/09/2019 by the Decision on Amendments to the Statute number: 01-01-08-20/19 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-izmjenama-i-dopunama-statuta-IUT-a.pdf. The University is managed by the Senate and the Board of Governors, who jointly appoint the Rector of the University. The Board of Governors is a collegial managing body responsible for the University operations. The University Board of Governors consists

of seven (7) members, of which two (2) members are appointed by the University Senate, and five (5) members are appointed by the founder.



Organizational chart of the International University Travnik

The mission and vision of the University are publicly available on the University's official website http://iu-travnik.com/misija-i-vizija/, as well as on the University's bulletin board. They were adopted bilingually in Bosnian and English.

Mission of IUT

To educate a versatile, socially responsible and professional graduate, capable of facing the complex problems of managing economic and social development. To provide quality and efficient education at all levels of academic studies and to direct education towards flexible learning methods and acceptance of new trends in education. In order to develop creativity and critical thinking in their students, IUT lecturers are actively methodologically creative, and include various technical aids, the Internet, examples from real life and business practices in their classes. Classical classrooms with many students and monotonous lectures are replaced by smaller groups, in which active discussions take place around the round table, as well as field teaching, individual counselling and clarification, and learning through various tasks and projects. Developing and introducing new models of education and creating a

climate of success and high expectations through the promotion of European dimensions in higher education and international cooperation as well as the development of scientific and research careers with increased scientific production. In its strategy, IUT has outlined a mission and training of young people for practice, as well as scientific research. Student internship has an impact on the employment of students upon graduation, while the internship itself undoubtedly strengthens students' practical skills, abilities and knowledge. We have included internship as an obligation within all study programs.

Therefore, the strategy of the University's own development is focused on:

- Modernization of curricula and introduction of new teaching methods and forms of work,
- Provision of modern infrastructure and equipment,
- Encouraging graduation within the study period,
- Connection between teaching and scientific research at all levels of education,
- Constant renewal and rejuvenation of the teaching and research staff,
- Objectification of student evaluation,
- Increasing the number of highly educated citizens in Bosnia and Herzegovina and harmonizing the enrollment policy with the needs of the labour market,
- Opening of new study programs in accordance with the market needs and modern technology requirements.

With the vision of development, we strive to:

- Create assumptions for shaping highly satisfied students with a strong sense of belonging to the community where they live and work.
- Include a larger number of not only domestic but also international academic staff, who will recognize the University as a collegial place of work, development and progress, and thus increase the enrollment of students from Europe and the world.
- Attract more students in postgraduate studies who will be attracted by the attractiveness of both educational and scientific-research intercultural competences.
- Develop a strong philanthropic support with a focus especially on those students with extraordinary research abilities.
- Further development of distance learning within e-education which is coordinated with daily changes in usable new technologies within the implementation of the above.

- Establish and develop the University, as a higher education institution, as an excellent interactive place within the internationalization of both education and scientific research processes.
- Introduce teaching in English in all study cycles in order to achieve internationalization.
- Organize joint study programs with reputable international universities in all study cycles to enable students to obtain double degrees.
- Modernize curricula and launch new study programs in accordance with the needs of the labour market and the requirements of modern technology.
- Encourage and strengthen student internships within all study programs so that graduates are competitive and capable of working in the economic and social sectors.

International University Travnik is focused on contributing to the local, regional and global community through concrete achievements of the higher education process, which is constantly developing and improving through integration and innovation, through inspiring forms of dissemination and application of knowledge and skills. In the period ahead, we will create appropriate prerequisites for the implementation of innovative partnerships with business and social entities, with a continuous focus on sustainability and further development of the academic appearance of all study programs with a developmental and sustainable attitude towards environmental protection, along the viability of the city of Travnik as a city of science and knowledge.

The University is an integrated and accredited higher education institution.

2.1. Faculty of Ecology Travnik in Travnik of the International University Travnik in Travnik

FACULTY OF ECOLOGY TRAVNIK IN TRAVNIK (abbreviation: TEF)

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Dean: Prof. Ph.D. Krsto Mijanović

The Faculty of Ecology Travnik was founded in the year 2010. The organization of undergraduate studies in this area represents an essential synthetic basis for a theoretical and methodological approach to the transformation of theoretical knowledge into the operational practice of sustainable development.

In this way, the Faculty of Ecology assumes the obligations arising from international documents that define the strategy for the development of scientific and research institutions and their role in strengthening the local community for European integration. Thus ecology as a new scientific field entails the need to study the natural sciences, as a prerequisite for the further development of science and technology.

The aim of the education of students at this faculty is to train experts who will be able to act independently and improve measures for environmental protection, preventive and precautionary measures, and methods of monitoring production processes throughout the entire life cycle. Education at this program will enable students to develop the necessary creativity and coping skills for new situations when solving specific problems in the profession.

Students who complete the program of the Faculty of Ecology can be employed in state bodies, governmental and non-governmental organizations, institutes for nature protection, health and urban planning and others that deal with the implementation of ecological projects, companies and educational institutions and other organizations whose goal is to preserve and improve the environment.

3. GENERAL INFORMATION ON THE STUDY PROGRAM

Name:	Master's study in the field of Environmental Sciences, majoring in Environmental Engineering
Level (cycle):	II cycle, Master's study
Model:	The study program follows the 4+1 model. The proposed master's degree program lasts for one year.
Number of ECTS points:	60 ECTS points
Type of study:	Academic study of the second cycle
Title:	Master of Ecology, majoring in Environmental Engineering
Area:	Biotechnical Sciences
Field:	Ecology
Mode of study:	Full-time and part-time at the seat of the study organizer.

Classes are held in BOSNIAN/CROATIAN/SERBIAN language. From the academic year 2014/2015, based on the approval of the CBC Ministry of Education, Science, Culture and Sports number: 03-38-812/14 dated 01/08/2014, classes can be held in ENGLISH and TURKISH language.

3.1. Goals and objectives of the study program

In conditions of dynamic technological development, land and water, as strategic natural resources, are exposed to numerous degradation processes that threaten their use. Development of disciplines in the field of environmental engineering is a response to the growing needs to provide technical decisions for socio-economic development, and at the same time, to protect natural resources and the environment.

By studying this program, you learn how to: manage watersheds, protect land and water from degradation and explicitly prevent natural disasters (consider the risk of flooding), make a project for protection of degraded areas, and much more, with ability to create certain systems in accordance with ecological principles which integrate needs of the society with the natural environment.

Field experience is a mandatory part of the program of almost all courses, and it is specially accessed within the first semester courses. Future masters are educated in multidisciplinary field, so each student can direct his/her education according to his/her interests through field experience and elective courses.

The main disciplines of environmental engineering deal with water supply, waste water, storm water, solid waste, hazardous waste, noise radiology, industrial hygiene, oceanography and the like. Environmental sciences represent an interdisciplinary field that includes scientific branches that intertwine with each other, from those based on biological and natural foundations, to technical and economic ones, so that this study enables the connection between these branches, giving extraordinary opportunities for a broad interdisciplinary approach to certain scientific problems. Ecological engineering in protection of land and water resources is a study of the modern age whose development has an exceptional significance for human beings and the whole world. Combining ecology and engineering, the student shall deal with monitoring, shaping and building the economic system. The purpose of the study program is to fully educate staff of ecological profile. The structure of the study program ensures the continuous improvement of academic education about the environment through scientific and applied courses, while the competences and skills acquired at this level of study represent a body of basic knowledge for continuous education in doctoral studies in environmental protection and related profiles.

The main purpose of the study program is to form the core of research work in the fields studied at the Faculty.

Students who have completed the I study cycle at the Faculty of Ecology should:

- Acquire a master's degree, which will increase their chances of employment;
- Acquire knowledge/skills/practice that will enable them to engage in scientific research, to work and publish papers of international importance;
- Have stimulating, multidisciplinary teaching that combines ecological / biological and classical engineering disciplines;

- Provision of highly qualified experts, who will be able to influence the application of ecological principles in engineering works in private fields (water management, forestry, agriculture), whether they work in organizations that manage natural resources, companies that provide federal environmental engineering services, or government agencies;
- Teaching and technical staff at the Faculty of Ecology should cooperate and share knowledge/skills/practices with other higher education institutions and stakeholders in the Western Balkan region;
- Equip the laboratory for EMAB;
- Offer students an attractive study program;
- Jointly apply for EU grants, jointly write scientific papers;
- Cooperate with industry, water management and various managers in the field of water protection;

The goal of the study program is the education of professional staff in the field of inland water ecology and environmental protection.

The specific goal of the study program is the education of experts who will be, on the basis of broad knowledge in the field of ecology and environmental protection, prepared for independent scientific and research work in institutions dealing with basic and applied research.

The Ecological Engineering study program is based on the fundamental methodological principle of consistency, ensured quality of biological assessment and scientific standards (EU Water Framework Directive).

3.2. Qualification profile

The legal basis for organizing the II study cycle is contained in the Law on Higher Education of the CBC, as well as the Statute of the University and the Study Rules for the II cycle of studies at the University.

The study program is realized as a master's study program at the Faculty of Ecology Travnik in Travnik in duration of one year (two semesters) with a total load of 60 ECTS points.

The host and proponent of the study program is the Faculty of Ecology Travnik of the International University Travnik in Travnik. Upon successful completion of the study

program of the second study cycle, the title of Master of Ecology is acquired, with indication of the major/study program.

The supplement or addition to the master's degree provides insight into the structure of the courses taken, the number of individual ECTS credits earned, the learning outcomes and acquired competencies of the student.

3.3. Description of general and subject-specific competencies of the student

By mastering the study program, the student acquires the following general abilities of:

- Logical thinking, formulating assumptions and drawing conclusions;
- Publication of various scientific and professional information, giving opinions and exchanging ideas;
- Independent and team research work;
- Planning and execution of experiments;
- Scientifically based interpretations of experimental data;
- Effective scientific communications;
- Management of research teams;
- Forming an attitude about the necessity of continuous improvement.

By mastering the study program, the student acquires the following subject-specific abilities:

- Application of the acquired basic knowledge in the ecology of inland waters and related natural sciences;
- Planning, collecting, evaluating and interpreting relevant information from various sub-disciplines of water and environmental protection;
- Understanding and solving problems in various situations that arise during work related to environmental science;
- Planning and evaluation of one's own continuous professional development.

3.4. Description of learning outcomes

The outcome of the learning process is an expert with the advanced academic education who has significantly expanded and deepened his/her knowledge in relation to the knowledge acquired in basic academic studies as well as the integrated knowledge necessary for understanding the scientific foundations in the field of ecology. The acquired knowledge provides the student with the expertise to work in laboratories and research centres of ecological profiles.

Minimum learning outcomes:

- Recognition of the importance of ecological disciplines in modern science;
- Integrated knowledge about the functional organization of aquatic biosystems at the levels of organisms, populations and ecosystems;
- Acquired environmental education that enables originality in the development or application of ideas in the context of research;
- Developed ability to solve problems in a new environment with a wider, multidisciplinary context;
- Independent collection of data from professional and scientific literature;
- Successful application of the principles of good laboratory and field practice in the processes of planning, execution and management of the experiment.

Professional competences:

- Ability to integrate knowledge and deal with complex problems, and to formulate judgments based on incomplete or limited information, but with reflection on social and ethical responsibilities related to the application of their knowledge or judgments;
- Ability to communicate his/her conclusions, knowledge and reasoning on which they are based, using appropriate language, to non-specialized and specialized audiences, clearly and unambiguously.

Personal competences:

- Ability to raise his/her knowledge to a higher level, deepen the understanding of his/her field of study or discipline, and continuously develop his/her own skills, through independent learning and development;
- Possession of learning skills that enable him/her to continue his/her studies in a way that will be mostly self-directed and autonomous;
- Acquired interpersonal and teamwork skills, suitable for different learning and employment contexts, and demonstration of the ability to lead and/or initiate initiatives and to contribute to change and development.

4. ADDITIONAL INFORMATION ON THE STUDY PROGRAM

4.1. Conditions for enrollment in the study program

The University enrolls students on the basis of the Decision on Enrollment, upon the approval of the competent Ministry, which contains the number of full-time students, the number of part-time students, the number of foreign nationals and the number of distance learning students if they are requested by request and approved by decision.

The number of enrolled students is determined according to the prior decision of the Cantonal Government approving the number of students per study program for enrollment in the new academic year at the proposal of the Ministry, and at the request that the University is obliged to submit to the Ministry no later than 4 months before the start of the academic year.

Based on the Decision on Enrollment, a student enrollment competition is announced. The competition is published in the press and on the official website of the University. As a rule, the competition is announced 3 months before the beginning of the classes. In case that in the first enrollment period the number of applicants is less than the anticipated number of enrollment vacancies, the student enrollment competition (second enrollment period) will be announced, which may remain open until the beginning of the academic year.

The right to enroll in the second cycle of master studies have all the candidates who meet the conditions regulated by the Law on Higher Education of the CBC, the Statute of the University and the Study Rules for the II study cycle, which is available on the official website: https://iu-travnik.com/wp-content/uploads/2019/11/Pravilnik-za-II-ciklus-studija-2019-PRE%C4%8CI%C5%A0%C4%86ENI-TEKST-januar.pdf.

Citizens of Bosnia and Herzegovina and foreign nationals who, after the nostrification/ equivalence of the diploma of the previously completed cycle/degree of study, have the right to enroll in the second study cycle under equal conditions, have been found to have completed adequate education for continuing studies in the second cycle.

4.1.1. General enrollment conditions

The right to enroll in a master's program have the candidates who have completed the first study cycle at a higher education institution in BiH, as well as the students who have completed the first study cycle abroad by submitting evidence of the completion of the first study cycle that has been nostrified by the competent institution in accordance with the law or by submitting a certificate that the specified diploma is in the nostrification process, which is evaluated with at least 180 (one hundred and eighty) or 240 (two hundred and forty) ECTS points, as well as candidates who have completed their studies according to pre-Bologna curricula.

A student who has completed undergraduate studies at a university for the duration of VI (six) semesters or VIII (eight) semesters has the right to enroll in the II study cycle under the obligation to take the defined conditional courses provided for in the Study Rules for the second study cycle.

The dean of the organizational unit defines conditional courses that the candidate is required to take. Passed conditional courses are recorded in the register book and in the notes section of the diploma supplement but they are not counted in the final average grade.

4.2. Conditions for transfer from other study programs within the same or related fields of study

Transfers to the study program are possible from the same or related study programs of the accredited higher education institutions in the country or abroad. The transfer procedure is carried out in accordance with the University acts.

Candidates who have completed their studies abroad submit their educational documents and a decision on equivalence/nostrification when applying to the competition, and if the nostrification procedure is in progress, they submit proof of the submitted request.

In case that the candidate has completed a study program of the first study cycle that belongs to a different field compared to the study program that he/she wants to enroll in the master's study, he/she takes conditional courses in accordance with the Study Rules for the second study cycle. The candidate is obliged to pass the conditional courses before taking the courses provided by the curriculum.

4.3. Evaluation system

Exams can be taken orally, in writing or with a combination of written and oral examination, or practically, if this is provided for in the course content. The student has the right to inspect the written part of the exam, as well as the right to file a complaint, in the same way as an undergraduate student.

The final grade on the student's success is determined on the basis of the student's overall activities during classes and the success achieved in the final exam, while only a passing grade is entered in the student's index (student book).

4.4. The possibility of employment for graduates

The masters in ecology-ecological engineering are trained to apply the acquired scientific knowledge in scientific and scientific-teaching institutions, state administration bodies, city and cantonal councils, advisory services, state inspectorates, control laboratories, ecological laboratories and research centers in the field of environmental protection, as well as nature protection institutes and national parks, in various manufacturing companies, educational institutions, and other public and private sectors.

Future masters will play a significant role in social institutions dealing with the sustainable development of society in which water management and protection of water and the environment play a key role. Also, candidates will have the opportunity to work in various domestic and international projects that participate in solving problems by applying ecological principles in accordance with national research priorities and needs of public and private sector.

Upon completion of the studies, the candidate is given the opportunity for further improvement in the third study cycle - doctoral studies related to the issues of water management, ecological engineering, protection of water and the environment.

4.5. Enrollment conditions for the next semester or quarter, i.e. the next year of study, and the method study completion

A one-year master's degree student (model 4+1) enrolls in the next semester (summer semester) after completing the previous semester (winter semester) and fulfilling the requirements of class attendance. Verification of the winter semester begins in the week after the end of winter semester classes and lasts until the beginning of the exam period. Enrollment in the summer semester will be done at least 5 days before the beginning of the summer semester classes. Verification of the summer semester begins in the week after the end of summer semester classes and lasts until the beginning of the exam period.

The rector's decision defines the time period for verification of the current semester and enrollment in the next semester. A student who after two semesters (model 4+1) does not complete all the obligations stipulated in the curriculum is given a year to complete his/her obligations while maintaining the status of a regular student. If the student does not complete his/her obligations within one year, he/she renews the last year of studies while maintaining the status of a regular student for one more academic year. A student who does not complete the obligations stipulated in the curriculum even within this period loses the status of a full-time student and continues his/her studies as a part-time student.

The master's degree program ends with the passing of all exams, as well as the preparation and public defense of the master's thesis in accordance with the study program and the Statute of the University.

4.6. Syllabus

Course syllabi will be presented in the following text of this Elaborate.

4.7. Evidence of the availability of the necessary space, personnel and technical resources

4.7.1. Space capacities

In April 2017, the University moved to the premises of a newly constructed building of 10,195.53 m^2 of space, with the address at Aleja Konzula-Meljanac bb. Travnik, The University received a Decision from the Department for Urban Planning, Construction, Cadastre and Property Legal Affairs on 14/03/2017, and on 05/12/2017 a permit for use and utilization of the commercial and educational facility was issued - http://iu-travnik.com/rektor-iut-a-ibrahim-jusufranic-preseljenje-u-novu-zgradu-je-kruna-desetogodisnjeg-uspjesnog-rada/. The building was constructed on three levels and was architecturally designed for the needs of the university community.

The University has the resources and all the space capacities for the undisturbed realization of educational activities, with the aim of creating optimal conditions for studying at the University, which provide support in the process of knowledge transfer. All available resources are used efficiently in terms of classrooms with modern equipment for carrying out the teaching process, laboratories and equipment as well as computers and computer equipment for monitoring world trends. The University's resources and infrastructure are presented in the following table.

Table 1. Presentation of resources and infrastructure in 2020/2021

RESOURCES AND INFRASTRUCTURE	
Total area of the building [m^2]	10,195.53
Total area of useful space [m^2]	4,101.34
Classroom area [m^2]	1,858.04
Area of the library space [m^2]	89.11
Area of the laboratory space [m^2]	151.05
Surface area for student standard (accommodation, food, recreation) [m^2]	222.66
Number of amphitheatres and/or large lecture halls	3
Number of classrooms	23
Number of seats for classes for students	1,251
Number of computer classrooms	2
Number of computers in computer classrooms	42
Number of computers in other rooms	70
Total number of computers	112
Number of laboratories	2
Total number of library units	14,297
Total number of books in the library	6,949
Number of persons employed in the library	1
Total number of administrative staff	49
Total number of staff in student services	6

Optimal size of an area intended for a student is different for different fields of study, and according to the Standards and Norms of the Central Bosnian Canton, the optimal size of the area per student for the respective field of study is shown in the following table.

Number	FIELD OF STUDY - SCIENCE	Optimal size of area per student
1.	Technical sciences	$15m^2$
2.	Biotechnical sciences	$10m^2$
3.	Social science	$6m^2$

The minimum area per student for certain fields of study cannot be less than 70% of the area presented in the previous Table. The University has got a total area of the building of 10,195.53 m^2, and the total number of students is 2,000. Classes are held from 8 a.m. to 10 p.m., which means that students are divided into three groups, and each student has got 15 m^2 available which fully fulfils standards and norms when it comes to the area intended for one student.

The University has also got two laboratories, the laboratory of the Faculty of Traffic and the laboratory of the Faculty of Ecology. The laboratories were originally provided for practical classes, that is, for exercises of individual courses that are foreseen in the curriculum. The laboratory of the Faculty of Ecology is specially equipped with modern equipment necessary for conducting and carrying out experiments, which, in addition to modern equipment, also has the BAS 17025:2018 standard, which regulates the work and quality of the laboratory. The Certificate was received from the Institute for Standardization on 04/03/2019 and displayed in the laboratory room of the Faculty of Ecology in Travnik.

All the University premises are accessible for persons with disability and other persons with special needs, such as specialized access for wheelchairs, and an elevator intended for use, as well as the facilities such as toilets, amphitheater, laboratories and other premises. The standards and norms define the University's obligation to ensure sanitary conditions and the appropriate number of toilets in accordance with the number of students staying at the higher education institution at the same time, i.e. one cubicle for 80 students staying in the

same shift. The University has got separate sanitary facilities for users. The University has got 11 toilets, that is, 42 cubicles, i.e. one cubicle for every 47 students, so the ratio of students to cubicles in the toilets has fully met the prescribed standards.

The University has also got 4 parking spaces for persons with disabilities and persons with special needs, as well as physical protection located at the entrance to the University building.

4.7.2. Personnel capacities

Teachers are selected for the positions of assistant professor/docent, associate professor and full professor in accordance with the Law on Higher Education of the CBC and internal acts of the University. Accordingly, the following conditions must be met:

- Assistant professor/Docent: scientific degree of Doctor of Science in the given field, at least three scientific papers published in recognized publications and demonstrated teaching abilities;
- Associate professor: at least one completed election period as an assistant professor/docent, at least five scientific papers published in recognized publications, a published book and original professional success, such as a project, patent or an original method, all after being elected to the position of assistant professor/docent, and mentoring of candidates at the second cycle level;
- Full professor: at least one completed election period as an associate professor, at least two published books, at least eight scientific papers published in recognized publications, all after obtaining the title of associate professor, and successful mentoring of candidates at the second and third cycle level.

The following table shows the planned personnel resources for the implementation of the Environmental Engineering study program per course of the mentioned study program.

Number	Course	Course teachers
1.	Methodology of Scientific Research in Ecology	Prof. Krsto Mijanović, PhD / Doc. Ana Anđelković, PhD
2.	Environmental Engineering	Prof. Božidarka Arsenović / PhD Prof. Ermedin Halilbegović, PhD
3.	Bioindications and Biomonitoring of Aquatic Ecosystems	Doc. Nedžada Tolja, PhD / Doc. Bojan Damnjanović, PhD
4.	Field Practice in Water Monitoring	Prof. Suad Obradović, PhD / Doc. Bojan Damnjanović, PhD
5.	Water Protection Technology	Prof. Božidarka Arsenović, PhD / prof. Ermedin Halilbegović, PhD
6.	EU and Regional Legislation on Freshwater Management	Prof. Rajko Kasagić, PhD / Doc. Ana Anđelković, PhD
7.	Ecology of Inland Waters	Doc. Mirano Jupić, PhD/ Doc. Ana Anđelković, PhD
8.	Practicum in Ecology And Botany	Doc. Nedžada Tolja, PhD / Doc. Bojan Damnjanović, PhD
9.	Practicum in Zoology	Doc. Mirano Jupić, PhD / Doc. Bojan Damnjanović, PhD
10.	GIS and Application of Remote Sensing Techniques in Ecology	Prof. Tešo Ristić, PhD / Doc. Bojan Damnjanović, PhD

Therefore, 7 doctors of science who are employed at the Faculty of Ecology Travnik of the International University Travnik, will take part in the implementation of the Ecological Engineering study program according to the following scientific and teaching titles:

1. Prof. Rajko Kasagić, PhD- full professor
2. Prof. Krsto Mijanović, PhD- associate professor
3. Prof. Božidarka Arsenović, PhD -associate professor
4. Prof. Ermedin Halilbegović, PhD -associate professor
5. Prof. Tešo Ristić, PhD -associate professor
6. Doc. Nedžada Tolja, PhD -assistant professor/docent
7. Doc. Mirano Jupić, PhD – assistant professor/ docent

5. COMPLIANCE WITH SOCIETY AND LABOR MARKET NEEDS

5.1. State of the environment in Bosnia and Herzegovina

The largest number of regulations that BiH needs to adopt on its way to the EU is in the field of energy and environment. Replacing outdated equipment with more efficient ones and taking steps aimed at reducing harmful gas emissions and increasing energy efficiency will directly contribute to the development of the economy. Bosnia and Herzegovina has been invited to consider its climate and energy framework until 2030 in accordance with the EU Green Paper on a 2030 framework for climate and energy policies. The new framework should contribute to further reduction of emissions of gases that cause greenhouse effects, provision of safe energy supplies and economic growth, competitiveness and employment through the application of high technology and more efficient spending.

In the field of agriculture, energy and ecology, it is necessary to strengthen strategic and institutional environment and determine the priorities of action. A whole series of legal solutions must be adopted in order to adjust and develop these areas, which are of the greatest importance for BiH society.

Related to water management in the FBiH, by-laws on determining the ecologically acceptable flow of surface water bodies have been adopted. In both entities, steps have been taken to develop appropriate strategies and plans for management of the Neretva, Trebišnjica and Sava river basins. Issues related to access to drinking water, untreated wastewater discharges and flood management are open.

In terms of nature protection, the Law on Nature Protection was adopted in the Federation of BiH, which continued harmonization with the Directive on the protection of birds and the Directive on the conservation of natural habitats and wild fauna and flora. In the Republic of Srpska, regulations have been adopted to improve the protection of several locations. Implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora has not begun. In the field of chemicals, by-laws which continued harmonization with the EU Regulation on Classification, Labeling and Packaging of Substances and Mixtures, as well as by-laws on biocides were adopted in the Republic of Srpska. Certain regulations in the field of ecology were also adopted, as well as the

Instruction on the content of the environmental impact assessment report. In terms of waste management, solid waste management planning activities were intensified.

Studies for the selection of locations for future regional sanitary landfills, as well as municipal waste management plans for selected regions, have been completed. In 2013, the Strategy of Radioactive Waste Management of BiH 78 was adopted, as was the Law on Liability for Nuclear Damage 79 at the BiH level. The State Regulatory Agency for Radiation and Nuclear Safety adopted Rulebook on Safety of Nuclear Material and Radioactive Sources 80. There is no systematic monitoring of the environment in BiH, nor a reporting system due to the complex division of responsibilities and obligations between the state, entities, cantons and municipalities. A special challenge is the lack of a large number of data and indicators, but also the lack of capacity to collect data in order to comprehensively assess the state of the environment in BiH.

The Law on Environmental Protection at the BiH level has not been completed yet. Existing environmental laws at entity levels are not harmonized. In the field of environment in the Republic of Srpska, by-laws were adopted which improved harmonization with the Strategic Environmental Assessment Directive and the Directive on Public Participation.

5.2. Contribution of the new study program to the state of the environment

The launch of this study program at the master's level of study has several reasons, such as providing the opportunity for participants of this study program to acquire focused scientific knowledge in the field of ecology and, with the help of the latest scientific knowledge and technology, to contribute to the development of science in the field of ecology and environment in accordance with the national research priorities and the needs of public and private sector. The purpose of this study program is education, realization of professional and research goals and tasks in the field of inland water ecology that will contribute to the fulfillment of the goals of the BiH Development Strategy in the part related to the environment.

Thanks to the launch of this study program, it is possible to establish partnership relations with business entities in the field of water resources, and in this way, future participants in this program could become familiar with problems in practice that they would work on in order to find an optimal and sustainable solutions.

The mobility of students is also guaranteed by the possibility to acquire a part of their ECTS points by taking courses and doing scientific work at other scientific and higher education institutions in the country and abroad.

The Master's degree program in Environmental Engineering is based on the latest world scientific knowledge, and as such, it acts as a stimulus for the development of new knowledge, skills and technologies necessary for the development of society, which is based on knowledge, both in national and international priorities. The master's degree program is comparable to other programs in the region and beyond, which is supported by the document Analysis of the Ecological Engineering Curriculum of the II Study Cycle at the Faculty of Ecology Travnik in Travnik that was adopted at the 5th session of the Quality Assurance Committee.

In addition, the Faculty of Ecology plans to apply to various international projects whose main purpose is to harmonize study programs with the goals of the Bologna Declaration and to find main partners and institutions with which the programs would be compatible.

5.3. Consultations with stakeholders

The Faculty of Ecology ensures the enrollment of students to master's degree program based on legal provisions, defined criteria, clear and transparent procedures, and in accordance with social needs, provided resources, and based on success in previous education and assessment of knowledge, aptitudes and abilities of a candidate.

After completing the first study cycle, the students are sufficiently enriched with knowledge and practical work, so they are qualified for further education in the narrower scientific fields of ecology, inland water ecology, environmental protection, etc. Candidates who already work in companies dealing with ecology, environmental protection, plant protection, agricultural advisory services and state institutions for water protection, the Sava River basin agencies, institutes for plant and environmental protection may also be interested in deepening their knowledge and acquiring new ones.

The master's degree program is organized in order to connect theoretical knowledge, scientific research and practical experience in the field of environmental engineering. The purpose of the program is to train participants for independent research work and for other jobs that require scientific approach: conducting fundamental and applied research at a high level in accordance with international standards. By including candidates from the economy in the

master's degree program, it is possible to gradually organize research and development units in the economy.

The solution for a modern working person is to enroll in a master's degree program. Namely, master's studies are no longer intended exclusively for people who work or plan to work at the university. A master's degree is important for many professions because it brings higher quality to the labor market.

The Faculty of Ecology Travnik in Travnik has carried out the following activities:

- Collection and analysis of curricula at universities in Bosnia and Herzegovina and abroad;
- Organization of a workshop with interested parties with the aim of defining the organization of the master's study;
- Consultations through the Faculty of Ecology's Stakeholder Forum with representatives of the economy, employers, private and social sectors in order to collect, analyze and use relevant information, which is a prerequisite for the efficient organization of this study;
- Presentations for future students;
- Survey of future students;
- Survey of representatives of the government sector, state institutions, representatives of the economy, private and social sector employers.

6. CURRICULUM

Curriculum is a document that establishes the competence profile of academic staff, the content and structure of study programs and the knowledge assessment procedure.

The curriculum and learning outcomes are based on:

- CBC Law on Higher Education (Official Gazette of the CBC 04/13);
- Standards and Norms for Higher Education in Central Bosnia Canton (Official Gazette of the CBC 11/13);
- Statute;
- Basics of the Qualification Framework in Bosnia and Herzegovina;
- Bloom's taxonomy

This document defines the learning outcomes for majors in all cycles, as well as learning outcomes for each course. In addition, study objectives, course content, teaching methodology, basic and additional literature, maximum number of students in lectures and exercises, number of hours of lectures and exercises and number of ECTS points are defined for each course.

The curricula and organization of study programs are fully harmonized with European criteria in accordance with the provisions of the Bologna Declaration, because the goal is to create flexible curricula in accordance with national and European standards. The University continuously carries out modernization activities by creating new curricula and changing existing ones with high-quality educational content in order to adapt to the needs of the times and the economy. Modernization implies improving the teaching content and methods of its implementation, improving the capacity of the institution, increasing the motivation of students for more active participation in formal and informal educational activities. The curriculum defines the courses, the total number of hours of lectures, exercises and other forms of instructions (hereinafter: classes).

The curriculum determines: the content of the course, the method of teaching and taking exams and other forms of knowledge assessment, as well as the mandatory textbooks, manuals and other mandatory literature on the basis of which the exam in that course is taken, as well as the number of ECTS points.

The study program is being implemented as the II study cycle at the Faculty of Ecology Travnik of the International University Travnik in the duration of one academic year (two semesters). The study program of the second study cycle - Environmental Engineering- is a scientific research-oriented study in which the student is to achieve 60 ECTS credits. The curriculum of the Environmental Engineering master's study program includes: Lectures and other forms of teaching activities in the duration of 1 semester and 1 semester is provided for the preparation and defense of the master's thesis. 30 ECTS points are acquired through the classes. The remaining credits are earned by writing and defending a master's thesis. The curriculum of the Master's study program consists of a compulsory and an elective part. In the first semester, the student is introduced to the theoretical foundations of a specific subject area through classes of compulsory and elective courses of a certain subject area. In these courses, the student is required to pass the exam in the manner prescribed by the Study Rules for the Second Study Cycle https://iu-travnik.com/wp-content/uploads/2019/11/Pravilnik-za-II-ciklus-studija-2019-PRE%C4%8CI%C5%A0%C4%86ENI-TEKST-januar.pdf which is available on the official website of the university. The student has four compulsory courses and chooses one elective course from the offered 6 courses. In the second semester, the student prepares the master's thesis and defends the master's thesis. In accordance with the Study Rules for the Second Study Cycle, the student is obliged to apply for the topic of the master's thesis in accordance with the prescribed form for the Application of the topic of the master's thesis. Student activities during the study semesters are regulated by the Study Rules for the Second Study Cycle which is available at the official website: https://iu-travnik.com/wpcontent/uploads/2019/11/Pravilnik-za-II-ciklus-studija-2019-PRE%C4%8CI%C5%A0%C4%86ENI-TEKST-januar.pdf.

The estimated number of students to enroll for the two academic years 2021/2022 and 2022/2023 is 10 students.

6.1. Curriculum of the study program: Environmental Engineering model 4+1

Number	Course	Number of hours L+E	ECTS
I semester			
1.	Methodology of Scientific Research in Ecology	2+1	6
2.	Environmental Engineering	2+1	6
3.	Bioindications and Biomonitoring of Aquatic Ecosystems	2+1	6
4.	Field Practice in Water Monitoring	2+1	6
5.	Elective course	2+1	6
Total ECTS I semester			30
II semester			
7.	Master's Thesis		30
Total ECTS II semester			30
Total ECTS I year			**60**

Number	Course	Number of hours L+E	ECTS
Elective courses			
1.	Water Protection Technology	2+1	6
2.	EU and Regional Legislation on Freshwater Management	2+1	6
3.	Ecology of Inland Waters	2+1	6
4.	Practicum in Ecology and Botany	2+1	6
5.	Practicum in Zoology	2+1	6
6.	GIS and Application of Remote Sensing Techniques in Ecology	2+1	6

6.2. Curriculum of the study program: Environmental Engineering model 4+1

COURSE PROGRAM - SYLLABUS

Study level	II CYCLE		*Faculty*	Ecological faculty Travnik			
Course	**METHODOLOGY OF SCIENTIFIC RESEARCH IN ECOLOGY**						
Year	I	*Course status*	COMPULSORY	*Code*	M 4-29	*ECTS credits*	6
Semester	I						
Teaching weeks	15	*Teaching classes*		*Lectures*	*Exercises*		
				2	1		
Number of students		*Lectures*		*Exercises*			
		15		15			

Objective of the course	This course will introduce students to the principles of scientific research in ecology. Students should acquire basic knowledge about the nature and type of data in ecology, the way it is collected, stored, shaped, processed, interpreted, presented and published. The main goal of the course is the adoption of ethical principles in all phases of ecological research.
Learning outcome	Students acquire knowledge about methodologically and ethically correct collection and manipulation of data in ecology, organization and design of ecological research. They acquire basic skills and techniques for research and proper use of scientific databases and scientific literature. Students are capable of structuring their scientific work independently.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra — 60% 2. exercises — 30% 3. discussions — 10% Participation in assessment (%): 1. activities at the classes — 20% 2. seminar paper — 30% 3. presentation of seminar paper — 20% 4. final exam — 30%
Teaching conditions	Room with a computer and projector
Basic thematic units	1. Concept, task and division of science, Universal dialectical laws, Logical forms and methods in scientific research; 2. Experiment and statistics in scientific research, errors in experimentation, application of statistical methods; 3. Procedures in scientific research (determining the subject of environmental research, creation of research, work plan, data collection, compilation and distribution of data, scientific explanation); 4. Formulation of problems in environmental research, definition of research objectives, definition of research criteria, aspects of system analysis; 5. Types of professional and scientific papers, structure of scientific papers, language and style of scientific papers, research; 6. Scientific method, facts and scientific method, hypotheses and scientific method, testimony and scientific method, system in ideal science; 7. Classification of systems, complex systems, the concept of system analysis, the concept and functions of system analysis for environmental research, stages of system analysis; 8. Characteristics of the scientific method of self-correction, abstract nature of scientific theories, types of scientific theories, limitations and value of the scientific method; 9. Knowledge as a factor in acquiring, creating and maintaining a competitive advantage; Essence and procedure of knowledge management; 10. Frameworks for creating a successful knowledge management program; Organizational culture and knowledge management; Choosing a topic for environmental research (master's and doctoral thesis, paper for a journal / conference); 11. Searching for documentation (compiling a working bibliography);Collection of materials (reading and criticism of texts, notes, web search); 12. Organization and arrangement of collected material, Editing of manuscripts; 13. Documentary background of the manuscript (citations, footnotes, final bibliography); Stylistic features and grammatical correctness; 14. Technical processing and manuscript printing (DTP); Thesis defense (public presentations, participation in conferences, etc.); 15. Project task - how to write it; Project management; Teamwork and skills; Logical activity matrices and work packages; EU programs for research and development and innovation; ERA - European Research Area.

Literature	***Compulsory literature:*** 1. Savić, J.Đ. 2013. Metodologija naučnog saznanja I – Kako stvoriti naučno delo u biomedicini. Data Status. Beograd 2. Savić, J.Đ., Matutinović S.F. 2013. Metodologija naučnog saznanja II – Kako napisati, objaviti i vrednovati naučno delo u biomedicini. Data Status. Beograd. ***Further literature:*** 1. David E. Ford. 2006. Scientific Method for Ecological Research. Cambridge University Press. Cambridge;

COURSE PROGRAM - SYLLABUS

Study level		II CYCLE		*Faculty*	Ecological faculty Travnik		
Course		**ENVIRONMENTAL ENGINEERING**					
Year	I	*Course status*	COMPULSORY	*Code*	M 4-30	*ECTS credits*	6
Semester	I						
Teaching weeks		15		*Teaching classes*		*Lectures*	*Exercises*
						2	1
Number of students				*Lectures*		*Exercises*	
				15		15	

Objective of the course	To train students to apply various aspects of environmental protection engineering. To spread knowledge about different techniques and technologies that are applied in the protection of air, water and/or soil.
Learning outcome	Students will be able to understand and apply knowledge about different techniques and their combinations in technological lines for air, water and/or soil protection. After completing the course, students will be able to independently use their knowledge about solutions and advanced processes in environmental protection by applying appropriate methods and procedures.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room with a computer, projector and laboratory equipment
Basic thematic units	1. Reactors in environmental protection engineering 2. Basic wastewater treatment operations - Part I 3. Basic wastewater treatment operations - Part II 4. Basic wastewater treatment operations - Part III 5. Basic wastewater treatment operations - Part IV 6. Basic waste gas treatment operations - Part I 7. Basic waste gas treatment operations - Part II 8. Basic waste gas treatment operations - Part III 9. Waste treatment techniques, wastewater and gas treatment 10. Municipal wastewater treatment 11. Industrial wastewater tratment 12. Industrial waste gas treatment 13. Waste treatment 14. Sediment remediation – Part I 15. Sediment remediation – Part II
Literature	*Compulsory literature:* 1. Masters, G.M., Wendell, E.P.: Introduction to environmental engineering and science. Prentice Hall, 2008. 2. Vesilind, A.P., Morgan, S.M.: Introduction to environmental engineering. Cengage Learning, 2010. *Further literature:* 1. Schwedt, G.: The Essential Guide to Environmental Chemistry, John Wiley and Sons, 2001. 2. Mitcsh, J.S.E. Jorgensen: Ecological Engineering and Ecosystem Restoration, John Wiley and Sons, 2003. 3. McCabe,W.K., Smith,J.C., Harriot,P., Unit Operations of Chemical Engineering, McGraw-Hill, New York, 2005. 4. Metcalf & Eddy: Wastewater Engineering, treatment disposal reuse. McGraw-Hill, 2014. 1. Mines, R.O., Lackey, L.W.: Introduction to environmental engineering. Prentice Hall, 2009.

COURSE PROGRAM - SYLLABUS

Study level		II CYCLE		*Faculty*	Ecological faculty Travnik		
Course		**FIELD PRACTICE IN WATER MONITORING**					
Year	I	*Course status*	COMPULSORY	*Code*	M 4-32	*ECTS credits*	6
Semester	I						
Teaching weeks		15		*Teaching classes*		*Lectures*	*Exercises*
						2	1
Number of students				*Lectures*		*Exercises*	
				15		15	

Objective of the course	The goal of this course is to develop the skills of analyzing the condition in various types of aquatic ecosystems.
Learning outcome	The structure of the practicum includes a balance of classroom lectures, field classes, field and laboratory exercises and integrated group projects, with the aim of providing knowledge of the final assessment tool, including a complete assessment of the aquatic ecosystem based on the zoological part of the biocenosis. Field trips are designed to expose students to different types of aquatic ecosystems, management goals and practices
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra — 60% 2. exercises — 30% 3. discussions — 10% Participation in assessment (%): 1. activities at the classes — 20% 2. seminar paper — 30% 3. presentation of seminar paper — 20% 4. final exam — 30%
Teaching conditions	Room with a computer, projector and laboratory equipment
Basic thematic units	1. Water quality indicators and classification: water quality. Physical indicators of water quality: temperature, smell and taste, color, turbidity, dispersed substances and conductivity. 2. Chemical indicators of water quality: total dissolved substances, hydrogen ion concentration, alkalinity, water hardness, dissolved gases, organic substances, nutrients, metals, other chemical indicators. 3. Technological procedures of water preparation: filtration, flocculation, deferrization and demanganization, water disinfection 4. Technological schemes: drinking water technology, water technology for the needs of food industry, cooling water, boiler water. 5. Sources of water pollution: domestic wastewater, industrial wastewater, storm water, cooling water. 6. Procedures of the previous and first stage of water cleaning: sieving, shredding, leveling, sedimentation. 7. Third-level procedures: physical procedures, chemical procedures, biological procedures. 8. Water analysis: pH, electrical conductivity, alkalinity, total hardness. 9. State of oxygen in water, dissolved oxygen, chemical consumption of oxygen, biochemical consumption of oxygen. 10. Water analysis: nitrogen compounds, chlorides, sulfates, iron, arsenic. 11. Water sotening and decarbonization 12. Flocculation of colloidal-dispersed particles in water by the JAR test. 13. Biological indicators of water quality. Water classification. 14. Macrozoobenthos sampling methods. 15. Phytobenthos, macrophyte sampling methods and procedures for analysis and evaluation of biological elements of water quality - phytobenthos and macrophytes.
Literature	***Compulsory literature:*** 1. Green, W.R., Robertson, D.M., and Wilde, F.D., 2015. Lakes and reservoirs—Guidelines for study design and sampling: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A10, 65 p. ***Further literature:*** 1. Hauer, F. R., Lamberti, G. A. 2007. Methods in stream ecology, Elsevier

COURSE PROGRAM - SYLLABUS

Study level	II CYCLE		*Faculty*	Ecological faculty Travnik			
Course	**BIOINDICATIONS AND BIOMONITORING OF AQUATIC ECOSYSTEMS**						
Year	I	*Course status*	COMPULSORY	*Code*	M 4-31	*ECTS credits*	6
Semester	I						
Teaching weeks	15	*Teaching classes*		*Lectures*	*Exercises*		
				2	1		
Number of students		*Lectures*		*Exercises*			
		15		15			

Objective of the course	The goal of this course is to provide comprehensive knowledge of bioassessment methods in aquatic ecosystems, including different aquatic biota at different levels of organization (from suborganism to ecosystem). The chronological development of bioindication and biomonitoring methods will be presented with special emphasis on current routine monitoring programs, which are used to assess aquatic ecosystems throughout Europe.
Learning outcome	Students should gain a broad understanding of the principles, structure, and functioning of contemporary monitoring programs based on major groups of aquatic biota.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room with a computer, projector and laboratory equipment
Basic thematic units	1. Introduction. 2. The concept of bioindicator. 3. The advantage of bioindicators in relation to other indicators of the state of the environment. 4. Saprobic systems. 5. Biotic indices. 6. Multimetric and multivariate indices. 7. Algae as indicators of water quality. Trophic diatom index 8. Macrophytes as indicators of the state of aquatic ecosystems. Assessment of the trophic status of rivers 9. Macrophytes as indicators of the state of aquatic ecosystems. Assessment of the trophic status of lakes 10. Macroinvertebrates and the quality of aquatic ecosystems. Saprobic index 11. Macroinvertebrates and the quality of aquatic ecosystems. Trent Biotic Index 12. Macroinvertebrates and the quality of aquatic ecosystems. BMWP score index 13. Macroinvertebrates and the quality of aquatic ecosystems. Balkan biotic index 14. Fish as indicators of water quality. Index of biotic integrity 15. Fish as indicators of water quality. European fish index
Literature	***Compulsory literature:*** 1. Markert BA, Breure AM, Zechmeister HG (2002) Bioindicators and Biomonitors: Principles, Concepts and Applications. Oxford: Elsevier. pp. 997. 2. Milošević, Đ., Stojković-Piperac, M. 2018. Bioindikacije i biomonitoring -praktikum i radna sveska. Prirodno-matematički fakultet, Univerzitet u Nišu. Srbija, Niš ***Further literature:*** 1. Ziglio, G., Siligardi, M. & Flaim, G. (2006) Biological Monitoring of Rivers: Applications and Perspectives. John Wiley & Sons Ltd, Oxford, UK.

COURSE PROGRAM - SYLLABUS

Study level	II CYCLE		*Faculty*	Ecological faculty Travnik			
Course	**GIS AND APPLICATION OF REMOTE SENSING TECHNIQUES IN ECOLOGY**						
Year I *Semester* I	*Course status*	ELECTIVE	*Code*	M 4-38	*ECTS credits*	6	
Teaching weeks	15		*Teaching classes*		*Lectures*	*Exercises*	
					2	1	
Number of students			*Lectures*		*Exercises*		
			15		15		

Objective of the course	This course is designed to provide knowledge about Geographic Information System and remote sensing technologies and their applications in environmental monitoring, data collection and decision making.
Learning outcome	Students will be able to conduct field research using basic and advanced GIS and remote sensing technologies (GPS and UAV (drones)) and process data from georeferencing systems, spatial data models and databases, spatial data analysis and modeling; spatial data research and statistics; maps dissemination and data exchange and create a baseline predictive scenario for environmental impact studies using open access tools and resources.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room with a computer, projector and laboratory equipment
Basic thematic units	1. Technological basics of remote reading. 2. Electromagnetic radiation, remission and reflection. 3. Aerial photography and aerial photogrammetry. Aerial photographs, their application and interpretation in vegetation mapping. 4. Photointerpretation reading of different types of aerial photographs with emphasis on the recognition of landforms and types of vegetation. 5. Infrared reading, detection of vegetation damage. 6. Types of remote readings from space, satellite images, radargrams and thermograms. 7. Digital interpretation of aerial and satellite images. 8. Sonar recording of aquatic vegetation. 9. Types of GIS models. Creation of maps. Georeferencing of data. 10. Types and characteristics of computer technology and software support necessary for GIS. Creation of maps in DIVAGIS software. 11. Databases (graphic and attribute). 12. Use of global positioning systems (GPS) to maintain graphic databases. 13. Data sources and sensors in remote reading. Environmental variables in remote sensing. 14. Spatial analyzes in ecology. Spatial analyzes of biodiversity. 15. Reading the vegetation map and representations of vegetation succession. Models for predicting species distribution
Literature	***Compulsory literature:*** 1. Radulović S, Cvijanović D. 2016. Osnove ekologije. Udžbenik. Prirodno-matematički-fakultet, Univerzitet u Novom Sadu. Novi Sad. 2. Radulović, S., Teodorović, I. 2011. Ekologija i monitoring kopnenih voda. Metodološki priručnik. Prirodno-matematički fakultet. Novi Sad ***Further literature:*** 1. Horning, N. 2010. Remote Sensing for Ecology and Conservation: A Handbook of Techniques. Oxford University Press

COURSE PROGRAM - SYLLABUS

Study level		II CYCLE		*Faculty*	Ecological faculty Travnik		
Course		**PRACTICUM IN ZOOLOGY**					
Year	I	*Course status*	ELECTIVE	*Code*	M 4-37	*ECTS credits*	6
Semester	I						
Teaching weeks		15		*Teaching classes*		*Lectures*	*Exercises*
						2	1
Number of students				*Lectures*		*Exercises*	
				15		15	

Objective of the course	The aim of this course is to develop the skills of analyzing the state of different types of aquatic ecosystems using different animal groups (macroinvertebrates, fish, amphibians).
Learning outcome	The structure of the practicum includes a balance of classroom lectures, field classes, field and laboratory exercises and integrated group projects, with the aim of providing knowledge of the final assessment tool, including a complete assessment of the aquatic ecosystem based on the zoological part of the biocenosis. Field trips are designed to expose students to different types of aquatic ecosystems, management goals and practices.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room with a computer, projector and laboratory equipment
Basic thematic units	1. Introduction 2. Physical and chemical characteristics of water 3. Carbon dioxide - Determination of bound CO2 in water (Alkalinity) 4. Carbon dioxide - Determination of free CO2 in water 5. Determination of water hardness 6. Spatial arrangement of organisms 7. Determining the population density of planktonic crustaceans 8. Determining the population density of the Gammarus balcanicus species 9. Estimation of population density using the marking and recapture method 10. Determination of diversity index 11. Determining the Similarity Index 12. Adaptations of macroscopic invertebrates to the speed of water flow 13. Adaptations to the planktonic way of life 14. Adaptations to life in terrestrial subterranean habitats 15. Adaptations to life in aquatic subterranean habitats
Literature	***Compulsory literature:*** 1. Green, W.R., Robertson, D.M., and Wilde, F.D., 2015. Lakes and reservoirs—Guidelines for study design and sampling: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A10, 65 p. ***Further literature:*** 1. Hauer, F. R., Lamberti, G. A. 2007. Methods in stream ecology, Elsevier

COURSE PROGRAM - SYLLABUS

Study level	II CYCLE		*Faculty*	Ecological faculty Travnik			
Course	**PRACTICUM IN ECOLOGY AND BOTANY**						
Year	I	*Course status*	ELECTIVE	*Code*	M 4-36	*ECTS credits*	6
Semester	I						
Teaching weeks	15	*Teaching classes*		*Lectures*	*Exercises*		
				2	1		
Number of students		*Lectures*		*Exercises*			
		15		15			

Objective of the course	The goal of this course is to provide basic knowledge about the morphological and anatomical characteristics of aquatic plants.
Learning outcome	Students will be trained in the preparation of plant material for morphological and anatomical analyses, as well as in microscopy techniques to study specific adaptations and functional traits of aquatic plant species.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room equipped with a computer, projector and laboratory equipment
Basic thematic units	1. Botanical scientific collections; Herbarium - organization and historical development 2. Types of herbarium collections, organization and functioning of herbariums 3. Sampling of plant material, types of samples, research plan 4. Identification of plant material, types of identification keys, character, significance levels of the character 5. Nomenclature of plants, International code of nomenclature of algae fungi and plants, typification 6. Specificities of plant determination - moss 7. Specificities of plant determination – club mosses, horsetail and ferns 8. Specificities of plant determination - gymnosperms 9. Specificities of plant determination - flowering plants 10. Specificities of plant determination - flowering plants, sympetal forms and dissection of flowers 11. Determination of plant material from herbarium samples - flower rehydration techniques 12. Comparative phenotypic and morphological studies of plant variability - character selection 13. Micromorphological studies of seeds, pollen grains and epidermal structures, cytological analyzes and chromosomal series 14. Statistical operations in processing the results of phenotypic and taxonomic variability; descriptive and multivariate statistics 15. Research project on phenotypic and taxonomic variability of plants. Preparation of a study on environmental impact assessment. Demonstrative character of the legal framework on the environment in Bosnia and Herzegovina. Drawing a conclusion. Environmental safety. Sources and forms of jeopardizing ecological safety. The role of engineering in environmental protection in ensuring sustainable development.
Literature	***Compulsory literature:*** 1. Blaženčić, J. 1994. Praktikum iz anatomije biljaka sa osnovama mikroskopske tehnike. Naučna knjiga, Beograd. 2. Tatić, B., Petković, B. 1998. Morfologija biljaka. Zavod za udžbenike i nastavna sredstva, Beograd. ***Further literature:*** Arber, A. 1920 – reprinted 2010. Water Plants – a study of aquatic angiosperms. Cambridge Library Collection, Cambridge University Press, Cambridge UK.

COURSE PROGRAM - SYLLABUS

Study level		II CYCLE		*Faculty*		Ecological faculty Travnik	
Course		**WATER PROTECTION TECHNOLOGY**					
Year	I	*Course status*	ELECTIVE	*Code*	M 4-33	***ECTS credits***	6
Semester	I						
Teaching weeks		15		*Teaching classes*		*Lectures*	*Exercises*
						2	1
Number of students				*Lectures*		*Exercises*	
				15		15	

Objective of the course	To improve students' knowledge of water quality, pollution and treatment technologies for water protection and pollution control.
Learning outcome	Mastering the necessary knowledge about water protection technologies. Students will be able to describe different types of water pollutants, explain possible ways of water pollution, including chemical processes in aquatic ecosystems, and understand the processes of treatment and control of wastewater
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room equipped with a computer, projector and laboratory equipment
Basic thematic units	1. Basic indicators of natural water quality 2. Sources of water pollution 3. The impact of pollutants on the aquatic ecosystem 4. Goals and aspects of wastewater treatment 5. Physical methods of treatment and primary wastewater treatment - Part I; 6. Physical methods of treatment and primary wastewater treatment - Part II; 7. Chemical and physical-chemical methods of wastewater treatment - Part I 8. Chemical and physical-chemical methods of wastewater treatment - Part II 9. Biological wastewater treatment - Part I 10. Biological wastewater treatment - Part II 11. Biological wastewater treatment - Part III 12. Tertiary treatment of wastewater 13. Treatment of sludge produced in the process of wastewater treatment 14. Basic principles of wastewater treatment 15. "Combined approach" in water protection control
Literature	***Compulsory literature:*** 1. Metcalf & Eddy: Wastewater Engineering, treatment disposal reuse. McGraw-Hill, 2014 2. M.J. Hammer, M.J.Jr. Hammer: Water and wastewater Technology, Pearson, Prentice Hall, 2004. ***Further literature:*** 1. J.C. Crittenden, R.R. Trussell, D.W. Hand, K.J. Howe, G. Tchobanoglous (2005) Water Treatment: Principles and Design, 2nd ed., John Wiley & Sons, Hoboken, New Jersey. 2. Degremot, Suez (2007) Water Treatment Handbook, 7th edition

COURSE PROGRAM - SYLLABUS

Study level	II CYCLE		*Faculty*	Ecological faculty Travnik			
Course	**EU AND REGIONAL LEGISLATION ON FRESHWATER MANAGEMENT**						
Year	I	*Course status*	ELECTIVE	*Code*	M 4-34	*ECTS credits*	6
Semester	I						
Teaching weeks	15	*Teaching classes*		*Lectures*	2	*Exercises*	1
Number of students		*Lectures*	15	*Exercises*	15		

Objective of the course	Bioassessment procedures are defined in detail through several sections of comprehensive laws. In order for all basic and practical courses within this program to be applicable - understanding and alignment with EU legislation and procedures are of the utmost importance. Through this course, we will practice and train students to apply the acquired knowledge to and through available legal frameworks.
Learning outcome	Students will be familiar with all EU legislation required in bio-assessment procedures, as well as with subsequent intercalibration procedures and further steps in harmonizing with already implemented processes in the EU.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room equipped with a computer and projector.
Basic thematic units	1. Introduction to course content and work methods. Directive 2000/60/EC - Water Framework Directive (WFD) - purpose, definitions, goals. 2. Inland surface waters - characterization. 3. Establishing reference conditions for inland surface waters. 4. Identification of pressures and anthropogenic influences on inland surface waters. 5. Quality elements for classification of ecological status of rivers – biological elements, hydromorphological parameters, chemical and physical-chemical elements, specific pollutants. Ecological status - normative definitions. 6. Quality elements for classification of ecological status of lakes – biological elements, hydromorphological parameters, chemical and physical-chemical elements, specific pollutants. Ecological status - normative definitions. 7. Monitoring of the ecological and chemical status of inland surface waters. 8. Groundwater - parameters for classification, definitions and monitoring of quantitative and chemical status, identification of pollutants (Directive 2006/118/EC). Impact overview of anthropogenic activities on groundwater. 9. Development of a river basin management plan in accordance with the Water Directive 2000/60/EC. 10. Intercalibration groups and the process of intercalibration of methods to assess the ecological state of inland surface waters. 11. Harmonization of national methods based on macrozoobenthos and phytobenthos in surface running waters with the results of the intercalibration exercise. 12. Directive 98/83/EC on the quality of water intended for human consumption - definitions, quality standards and parameters, monitoring, risk assessment. 13. Directive 91/271/EEC Urban Wastewater Treatment and Nitrate Directive 91/676/EEC. 14. Inland water management in protected areas – European framework. Link with Directives 76/160/EEC on the use of surface water for recreational purposes and Directives 79/409/EEC and 92/43/EEC on the protection of birds and habitats. 15. EU water directives integrated into the legislation of BIH
Literature	***Compulsory literature:*** 1. Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy; ***Further literature:*** Directive 91/271/EEC on Urban Waste Water Treatment; Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources;

COURSE PROGRAM - SYLLABUS

Study level		II CYCLE		*Faculty*	Ecological faculty Travnik		
Course		**ECOLOGY OF INLAND WATERS**					
Year	I	*Course status*	ELECTIVE	*Code*	M 4-34	***ECTS credits***	6
Semester	I						
Teaching weeks		15		*Teaching classes*		*Lectures*	*Exercises*
						2	1
Number of students				*Lectures*		*Exercises*	
				15		15	

Objective of the course	This course is designed to provide basic knowledge of the chemical and physical properties of water with advanced unifying concepts of community ecology and ecosystem relationships found in continental waters.
Learning outcome	Students will be able to understand the elementary principles of hydromorphology and hydrogeochemistry fundamental to the distribution and abundance of aquatic organisms, using a holistic approach to freshwater assessment, developing skills in both field protocols and laboratory methods in freshwater ecology.
Organization of teaching methods and evaluation of students' work	Activity description (%): 1. ex cathedra 60% 2. exercises 30% 3. discussions 10% Participation in assessment (%): 1. activities at the classes 20% 2. seminar paper 30% 3. presentation of seminar paper 20% 4. final exam 30%
Teaching conditions	Room equipped with a computer, projector and laboratory equipment.
Basic thematic units	1. Basic terms in inland waters ecology. 2. Physicochemical properties of water - importance and interdependence of individual parameters, influence on flora and fauna, differences and similarities of freshwater ecosystems (oxygen, temperature, dissolved gases, salinity/conductivity/micro- and macroconstituents, density, stratification). 3. Light and temperature as limiting abiotic factors in inland waters ecology. 4. Hydromorphological parameters as indicators of the ecological status of inland waters 5. Nutrients, trophic rating and water quality - indicators and classification. Primary and secondary production. Trophic relations and feeding methods. 6. Division, ecological classification, horizontal and vertical arrangement of aquatic organisms. 7. Living communities of aquatic habitats and their specificities. 8. Adaptations of organisms to living conditions in the aquatic environment. 9. Invasive species. 10. Types of indicators of the ecological status of inland waters. 11. Importance and protection of wetlands and floodplains. 12. Human influence on aquatic ecological systems. Ecological characteristics and importance of reservoirs. Connection of alternative sources of energy and water. 13. Monitoring and assessment of the state of aquatic ecological systems. 14. Legal frameworks for water protection - domestic and international conventions. 15. Protection and management of aquatic ecological systems.
Literature	***Compulsory literature:*** 1. Radulović, S., Teodorović, I. (2010). Ekologija i monitoring kopnenih voda. Metodološki priručnik. Prirodno-matematički fakultet. Univerzitet u Novom Sadu. Novi Sad ***Further literature:*** 1. Doods, K., W. (2002): Freshwater Ecology: Concepts and Environmental Applications, Division of Biology, Kansas State University, Mannhatan, Kansas. Academic Press. San Diego, San Francisco, New York, Boston, London, Sydney, Tokyo;

6.3. Compliance with the mission and strategy of the University and organizational unit

The organization of this new study program is in accordance with the mission and strategy of the University and the Faculty, which is defined as "education within the I, II and III cycle of specialist studies in accordance with the needs and requirements of the environment, with constant organizational, material and methodological improvements." It is certain that such and similar activities are not entered into unilaterally, that is, without prior consultation with all subjects, starting from the direct bearers of the activity, to those who are collaborators in the program or future beneficiaries of the immediate results of the program.
The management of the Faculty was introduced to the proposal for the organization of this study and they expressed their approval and support for the planned program, so working meetings and interviews of potential candidates and their employers were held.

The mission of the University is to organize a wide range of educational processes of different contents and levels and to carry out theoretical, applied and developmental scientific research work, and to become one of the leaders in education of young professionals needed for the development of the economy and society in the gravity area, as well as for the improvement of the cultural and social development of the region and the country. The University wishes to achieve its mission through continuous education of university staff, constant improvement of the education process and the quality of management and leadership of the University.

The development vision aims to:

- ensure the conditions for constant progress in the society of higher education institutions of BiH;
- a flexible university, recognizable in the Mediterranean and in Europe, with internationally recognized educational programs;
- The University wants to create new knowledge and technologies for the time to come, introduce new forms of education, introduce multidisciplinary studies supported by modern technologies and train professionals for international "competition";
- The University will become a generator of the overall development of society, advocating for the application of international standards of education;
- The University wants to achieve its mission through continuous education of university staff, constant improvement of the education process and the quality of management and leadership of the University;

In addition to teaching staff of the Faculty of Ecology, the mentioned study program in its teaching process also includes teaching staff and courses from several universities in Bosnia and Herzegovina. The University strives to develop an integrated university that will be market-oriented, to take into account the specific requirements of the local environment based on priorities essential for regional development and enable the achievement of academic excellence at the international level, and this study program of the II cycle offers just that.

The goals and structure of the proposed master's study program are obviously aligned with the vision and goals of the University's development strategy. This especially refers to the encouragement of internationally recognized research activity, teaching based on research, creation of new ideas, critical thinking, creativity and active connection with the business, public and civil sectors.

The master's study program aims to monitor the needs of agricultural production in order to improve social and economic development through scientific research, while stimulating the creation of a strategic partnership between the Faculty, the University and the economy. The launch of the study program is also in line with the development policy of the International University Travnik.

7. THE BOLOGNA PRINCIPLES IN THE CURRICULUM

Fulfilment of the Bologna principles in the II study cycle is reflected in the fact that the II study cycle is designed to adopt and apply, to the greatest extent possible, all the positive principles on which the Bologna process is based.

The study program is open to the public because it has clearly defined goals and learning outcomes that are equally accessible to all interested parties.

The content of the study program was created on the basis of various monitoring of processes in the environment - it is defined according to the social needs expressed in it.

The study program is designed in such a way as to respond to the individual interests of the participants, students of the II cycle, through a combination of compulsory and elective modules, which implies a flexible and individually oriented course of education.

The structure of the II cycle studies, which is based on the system of ECTS points and original research, is the assumption that enables the mobility of students. Our second cycle students will be able to enroll in courses of other programs of the same cycle at other faculties and universities, both in Bosnia and Herzegovina and abroad. In the same way, students of other II cycle programs of other faculties and universities will be able to enroll in courses in our II cycle.

The study program of the II cycle will strongly encourage the principle of lifelong learning which, along with the acquired knowledge, its application and understanding and constant expansion, will lead to reliable assessments and scientific curiosity, which is a prerequisite for new scientific knowledge.

All study programs at the Faculty of Ecology are organized according to the principles of the Bologna Declaration, and therefore include the mobility of students and teachers. The evaluation of student efforts is based on the ECTS system, which is a prerequisite for student mobility. Mobility towards other studies and vice versa is in principle possible, but it depends on a specific case, and in most cases will be related to the need to pass differential courses. The Master's Study Council shall decide on it. The curriculum is also characterized by evident flexibility in the implementation of what is foreseen in the curriculum.

7.1. Mobility

International cooperation at the University is defined by the International Cooperation Strategy of the International University Travnik in Travnik for the period of 2017-2021. The Senate, on its session held on 16/03/2017 and by Decision number 01-01-03-42/17, appointed the Commission for development of the International Cooperation Strategy of the International University Travnik in Travnik for the period of 2017-2021. The decision is available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-imenovanju-komisije-za-izradu-strategije-o-medjunarodnoj-saradnji-201721.pdf.

The Commission drafted a Strategy that was adopted at the Senate session held on 11/04/2017. The Strategy is available on the official website http://iu-travnik.com/strategija-za-medjunarodnu-saradnju/, and the Decision on Adoption is available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-usvajanju-strategije-o-medjunarodnoj-saradnji-201721.pdf. International cooperation is achieved through international scientific and expert research projects, international projects in the field of higher education, international university networks and associations, as well as bilateral international agreements. The basic principles and procedures related to the international mobility of students and academic staff are regulated by the Rulebook on International Mobility, number 01-09-18/15 dated 06/01/2015 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Pravilnik-o-me%C4%91unarodnoj-mobilnosti.pdf which has been implemented at the University. The University supports and promotes student mobility as an integral part of the process of internationalization of higher education in accordance with the legal legislation of Bosnia and Herzegovina and generally accepted European standards and practices, in a way that the University announce competitions to which all interested students can apply: http://iu-travnik.com/erasmus-konkurs-za-mobilnost-studenata-i-administrativnog-osoblja-na-nicolaus-copernicusuniverzitetu-u-poljskoj-i-vilniaus-universitetu-u-litvaniji/. As part of the ERASMUS+ mobility program, a competition was announced in the summer semester of the academic year 2019/2020 for the mobility of students, academic and administrative staff of the International University Travnik to Vilnius Gediminas Technical University (Lithuania), Vilnius University (Lithuania) and "Angel Kanchev" University of Ruse (Bulgaria) which is available on the official website http://iu-travnik.com/erasmus-konkurs-za-mobilnost-studenata-akademskog-i-administrativnog-osoblja/. Information is also available to students on the official website http://erasmus.iu-travnik.com/index.php/en/ Cooperation with foreign universities, scientific institutions, international agencies and associations to help the development of science has been achieved to a large extent. All these activities offer a prerequisite for quality future forms of international cooperation. The most important driver of international cooperation at the International University Travnik is the management of the University itself. International cooperation is implemented through the following forms:

- Provision of financial resources based on precisely defined criteria.

- Provision of financial resources for international cooperation in postgraduate programs.
- Maximum use of available international funds.
- Defined international cooperation development strategy.
- Development of a special service for assistance with international project registration.
- Support and improvement of already existing student and teacher exchange programs of the International University Travnik in Travnik.
- Developing scientific and teaching international cooperation.
- Improvement of international cooperation with the aim of equal inclusion of the International University Travnik in Travnik in EHEA and ERA.
- Encouraging the mobility of teachers, students and other staff in terms of improving the quality and competitiveness of the International University Travnik in Travnik.
- Extremely rational use of funds and resources during the implementation of the program through the strengthening of the established department for international cooperation.

The University has signed international agreements with universities and institutions as shown in the attachment of this report. All signed agreements are available on the official website http://iu-travnik.com/sporazumi-sa-fakultetima-i-univerzitetima/.

7.2. Curriculum flexibility

The study program designed in this way is flexible. The flexibility of the study program is ensured through the offered competencies that include knowledge, skills and abilities that the student should possess at a certain level of study in the II cycle. Competencies enable flexibility and autonomy in curriculum development and at the same time represent common elements for describing educational goals. Competences are evidently developed in all program units and are determined separately for each level of the study program, i.e. its focus.

Flexibility is reflected in learning methods and in independent work and research. Flexible and innovative learning methods, suitable for the II study cycle, have been introduced.

The study program is designed in a way that a certain part of the teaching content is compulsory and/or common for all students, after which the students participate in creating their own qualification by choosing courses.

Flexibility of the study program is visible in other elements of this report, primarily the mobility segments, the established ECTS system and quality assurance.

7.3. Student internship

Student practice in this case is related to independent and mentored work and research in the master's degree program. Also, greater involvement of students in independent scientific and scientific-research work is achieved through exercises within each course. In addition, this project includes the procurement of equipment and the furnishing of laboratories that can be used in accordance with the needs of the student. The student internship is organized by the candidate in cooperation with the course professor, and the basic goal of the internship is aligned with the needs of the courses that are studied as part of the studies, and do not represent a separate course, but can be part of the studies, and, as already stated, in accordance with the selected syllabi and needs of research work. The purchased equipment that will be used is an inflatable boat for 8 people (VIAMARE 380 alu); Binocular OPTIKA microscope LAB20, magnification 7-45x, LED; OPTIKA microscope B-159 serial standard model; GPS device Garmin eTrex 20X; DC electrofisher Aquatech IG 1300 (2.6 kW, 80–470 V); Multi-parameter portable meter for pH, conductivity and oxygen WTW Multi 3420 IDS; Mobile photometer for rapid water testing, Lovibond MD600; Alkalinity Test Kit, Hanna HI-3811; Bottom sampler Ekman bottom Grab 400 cm^2, sample area: 400 cm^2, sample volume: 12 L, stainless steel AISI 316, finish: electrolacquer, automatic release, standard delivery comes without weights, can be added a maximum of 32 kg, total weight: max. 50 kg, dimensions when loaded: 360 x 280 x 650 mm, weight: 18.5 kg; Secchi disk; Macrophyte rake or grafnel; Portable refrigerator; Camera Nikon D3300; Professional hand net with wooden handle (250 mm wide), 300 mm deep bag, 250 micron and 250 NET frame; Photometric reagents Vario acid-hydrolyzing phosphate (0.02-1.6mg/l and 0.06-5mg/l), Varionitra set (1-30mg / l), 50 tests, hardcheck reagents P (100 tests); laboratory consumables and chemical supplies.

8. ELEMENTS OF QUALITY ASSURANCE

The elements of quality assurance in this study program follow the quality policies of the University. With internal documents (Rulebook on the quality system, quality declaration, quality policy, strategic directions of development, quality, etc.) we have identified areas of evaluation and bearers of activities within our internal quality assurance system.

The organizational structure of the quality assurance system at the University consists of:

- University Quality Assurance Committee;
- Office for quality assurance for the quality of the University;
  and
- Persons in charge of quality assurance at organizational units/study programs of the University.

The following acts regulate the area of quality assurance at the University:

- Rulebook on Quality Assurance at the International University Travnik available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Pravilnik-o-osiguranju-kvaliteta-pre%C4%8Di%C5%A1%C4%87eni-tekst-decembar-2015.pdf adopted at the Senate session on 15/12/2015 by the Decision number: 01-01-11-43/15 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-usvajanju-pravilnika-o-osiguranju-kvaliteta-2015.pdf.
- Rulebook on Quality Assurance of Study Programs available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Pravilnik-o-osiguranju-kvalitete-studijskih-programa.pdf adopted at the Senate session on 13/02/2015 by the Senate decision number: 01-01-02-27/15 available on the official website http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-usvajanju-pravilnika-osiguranju-kvaliteta-studijskih-programa-2015.pdf.
- Procedures for Ensuring the Quality of Study Programs adopted at the Senate session held on 11/05/2012 by the Senate decision number: S-27-39/12.
- Procedures for Ensuring the Quality of Study Programs at the International University, which were adopted by the Senate by the Decision No. 01-01-10-

44/16 dated 18/11/2016, available on the official website: : http://iu-travnik.com/wp-content/uploads/2019/11/Odluka-o-usvajanju-procedura-za-osiguranje-kvaliteta-studijskih-programa-2016.pdf.

These documents define the procedures for implementation and realization of learning outcomes for all organizational units, for departments, courses and for all cycles at the International University Travnik, and represent the evaluation and analysis of program achievements, verification of students' acquired knowledge and skills, assessment of results, monitoring of the teaching process and its compliance with the set strategic goals.

Promoting a culture of quality is aimed at the readiness of the University to fulfil its research and educational functions, to achieve quality as a goal, to achieve the satisfaction of service users (students and the community), and to transform the University.
Quality requirements for a specific area of the educational process are respected in accordance with the European Standards and Guidelines for Quality Assurance in the European Area of Higher Education (ESG), Standards and Guidelines for Quality Assurance in Higher Education in BiH (Official Gazette of BiH No. 13/08) and Criteria for Accreditation of Higher Education Institutions in BiH ("Official Gazette of BiH", No. 26/19). Organizational units in the system operate in an integrated manner and share responsibility for ensuring, managing and improving quality in all areas of the University's activities.

The areas of quality system evaluation at the University are:

- Rules and procedures in the assurance and promotion of the quality culture at the University;
- Application of the QA system at all levels of external and internal verification (self-verification);
- Status of study programs;
- Enrollment of students in study programs;
- Scientific and educational process;
- Evaluation process of student work;
- Information;
- Equipment for education and scientific research activity;
- Library activities;
- IT equipment and up-to-dateness of the information system;

- Administrative and technical resources;
- Upgrade in the application of academic standards;
- International cooperation;
- Periodic external quality assurance;
- Public engagement

With our quality assurance policy, we have tried to more clearly define our path through development and expanding a culture of quality.

Through teaching and teaching programs, scientific research, artistic research and professional activities and the continuous search for knowledge, all employees have been working and will constantly work on maintaining and improving the quality of teaching, scientific research and artistic research process, as well as on the application of scientific results in practice, with the aim of satisfying needs and expectations of all interested parties. All employees are familiar with this policy and strategy and accept it as an expression of collective commitment to continuous efforts to improve their own contributions to the common good.

The basic goals of quality in work are also defined:

- serve citizens through teaching, research and by providing other intellectual services;
- helping students to achieve their optimal potential;
- attract, hire, develop and retain quality teaching and other staff;
- expand capacities and improve curricula in accordance with the requirements of entities in the University's environment;
- enrich the teaching, library, laboratory, IT and other capacities of the University;
- expand the scope of cooperation with the environment by improving the quality of students, teaching, research and services;
- increase the scope of cooperation with domestic and foreign educational and scientific research institutions in all fields in order to fit into the world trends of education and development;
- increase the volume of work in international research programs.

The University carries out its teaching, research and artistic process by constantly innovating teaching contents and applying modern methods and techniques in education, scientific research and artistic work in a way compatible with education trends in Europe and the world, in accordance with demands of the higher education users while constantly improving the quality of its processes, activities and services.

The University builds its educational, research, artistic development and success by achieving its basic operational goals:

- ensuring the quality of study programs, curricula and programs;
- optimizing the number of students and increasing interest in studies at the University;
- monitoring and improvement of knowledge and competence of teaching and non-teaching staff;
- optimal use of material and human resources;
- improving the quality of scientific research and artistic activities;
- improving the quality of library and IT resources;
- improving the quality of working conditions and physical resources (space and equipment);
- improving the quality of existing and creating new documentation;
- strengthening the role of employees and students in self-evaluation and quality assessment;
- increasing the quality level of the management process;
- building and expanding the culture of quality.

The management bodies of the University ensure the understanding, application and maintenance of the Quality Policy in all organizational levels at the University. It is the right and obligation of all employees of the University and organizational units within the University to implement the quality policy, improve the quality, and contribute to the University's scientific and professional reputation with their work. Employees and students responsibly implement the Quality Policy and make suggestions for further quality improvement.

In accordance with the Statute of the University, the University ensures continuous development of the quality system in all aspects of its activities. Within the framework of the teaching and research process, the University organizes and implements activities to ensure the quality of higher education, in accordance with the quality principles in the European Higher Education Area (EHEA), European Standards and Guidelines (ESG) and regulations in Bosnia and Herzegovina, guidelines on internal quality assurance agreed upon at the state level (Agency for Development of Higher Education and Quality Assurance of BiH). The principles of internal quality assurance are harmonized with the principles of institutional autonomy and provide basis for the real responsibility of the University within the framework of domestic and international quality standards in the field of higher education.

The study program will be constantly updated and adapted to the needs of modern society, in accordance with the internal procedures and the needs of the environment.

Monitoring the quality of the course/module program, the work of mentors and supervisors and associates in the implementation of postgraduate doctoral studies is foreseen through:

- surveys of study participants;
- surveys of course/module holders;
- surveys of students who have completed the second study cycle - alumni.

There is an ALUMNI organization of students of the International University Travnik in Travnik.

9. COSTS OF STUDIES

Analyzing the total costs of the teaching process of higher education institutions in OECD countries, it can be concluded that the total costs of the teaching process can be classified into three groups, namely:

1. Labour costs (of teachers, associates and supporting staff),
2. Running costs necessary to maintain the teaching process,
3. Investment costs.

The labour costs of employed teachers, associates and supporting staff are dominant and account for 37.1% to 37.9% of the total costs. In the USA, one of the most developed

countries that particularly stimulate scientific research and scientific work, labour costs range up to 66.3%, depending on the university and its position in the higher education system.

Having in mind the state of the BiH economy, we have to be content with the fact that the professors and assistant professors salaries are significantly lower compared to the mentioned countries and that this trend will not change in the foreseeable future.

The running costs for maintaining the teaching process at this Faculty would have to follow the average running costs in higher education institutions in the OECD countries.

The education price per student in OECD countries varies from country to country and generally ranges from $2,500 to $15,731 in Switzerland. In Bosnia and Herzegovina, the price of education in the field of natural sciences ranges from 1,000 KM to 10,000 KM depending on whether it is a private or state university.

The cost of tuition fees during the project period will be borne by the International University Travnik.

Projected (expected) income and expenses

The regular income of the faculty is provided mainly from the tuition fees of future students. In addition, the faculty will also rely on donations from BiH businessmen who are interested in investing their funds. In return, the faculty will advertise the mentioned entities when publishing new books, etc.

I con[illegible]that this translation fully corresponds to original document written in Bosnian language.

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Travnik, 23rd A[illegible]2022

Fatima Radaslić
Certified court interpreter for English language

STALNI SUDSKI TUMAČ ZA ENGLESKI JEZIK
СТАЛНИ СУДСКИ ТУМАЧ ЗА ЕНГЛЕСКИ ЈЕЗИК
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